6. Bond the edges and corners of the strips securely to the surface. Before placing the overlay, rebond or replace strips that have loose edges or corners at no expense to the Department.
7. Place the asphaltic concrete overlay when the membrane surface is dry.
8. Traffic will be allowed to enter the section between the time of placing the membrane and placing the paving, for a maximum of 7 calendar days. Before paving, replace damaged or disbonded membrane at no additional cost to the Department.
9. Fill joints or cracks flush with the pavement if they are wider than 0.5 in (13 mm) or deeper than 3/8 in (10 mm) and not adequately filled to provide support for the membrane over the joint. Use PG 64-22 asphalt cement, hot pour, or other approved sealant material before placing the membrane as directed by the Engineer.
10. Clean the joint to remove dirt and debris before filling the joint. Comply with the short-term pavement marking requirements of Section 150.

445.3.06 Quality Acceptance

General Provisions 101 through 150.

445.3.07 Contractor Warranty and Maintenance

General Provisions 101 through 150.

445.4 Measurement

The membrane quantity, complete in place and accepted, is measured in linear feet (meters). The length for transverse joints waterproofed is based on the typical cross section in the Plans, except that, where widening occurs for extra lanes, field measurements are made to determine the exact length waterproofed.

The length for longitudinal joints and random cracks waterproofed are measured in place along the center line of the joint on the surface of the pavement. No allowance is made for laps.

445.4.01 Limits

General Provisions 101 through 150.

445.5 Payment

Payment will be made at the Contract Unit Price per linear foot (meter) of joint and crack waterproofed, which will include cleaning the surface and furnishing and placing the primer and membrane.

Payment will be made under:

Item No. 445	Waterproofing pavement joints and cracks (width)	Per linear foot (meter)

445.5.01 Adjustments

General Provisions 101 through 150.

Section 446—Placement of Pavement Reinforcement Fabric

446.1 General Description

This work includes installing Type II pavement reinforcement fabric and high strength pavement reinforcement fabric over cracks, joints, and patches in existing pavement. Install the fabric in strips or full width before placing an overlay where shown on the Plans or as directed by the Engineer. Install high strength pavement reinforcement fabric on interstate projects.

446.1.01 Definitions

General Provisions 101 through 150.

446.1.02 Related References

A. Standard Specifications

Section 150—Traffic Control

Section 400—Hot Mix Asphaltic Concrete Construction

Section 820—Asphalt Cement

Section 881—Fabrics

B. Referenced Documents

General Provisions 101 through 150.

446.1.03 Submittals

General Provisions 101 through 150.

446.2 Materials

Use the reinforcement fabric that meets the requirements of Subsection 881.2.06.

Bituminous binder materials, when required, shall meet the requirements of Section 413, "Bituminous Tack Coat" for the standard strength fabric and for the non-self adhesive high strength fabric. A primer coat meeting requirements of Section 822, "Emulsified Asphalt" shall be used when applying self-adhesive high strength fabric on milled surfaces.

446.2.01 Delivery, Storage, and Handling

General Provisions 101 through 150.

446.3 Construction Requirements

446.3.01 Personnel

General Provisions 101 through 150.

446.3.02 Equipment

A. Template

When using fabric strips, use a template or other method satisfactory to the Engineer to apply the bituminous binder uniformly.

B. Mechanical Device

Use a mechanical device approved by the Engineer when placing the fabric full width on the pavement to ensure the fabric is placed smooth, free of wrinkles, and with no uplifted edges.

C. Roller

Place the fabric in total contact with the underlying pavement. Roll the fabric with a static drum or pneumatic roller to ensure adequate adhesion to the pavement surface.

446.3.03 Preparation

Before an existing pavement surface is milled, mark the location of joints and cracks with an offset reference so that they can be located after milling has been completed.

A. Cleaning the Pavement

Immediately before applying the asphalt binder, clean the pavement surface to remove rocks, dirt, debris, and other materials that may prevent a clean bonding surface.

B. Repairing Potholes, Spalls, or Cracks

Before placing the fabric, repair potholes, spalls, or cracks greater than 3/16 in (5 mm) wide. Repair spalls and potholes using asphaltic concrete that meets the requirements of Section 400 or other materials such as cold mixes approved by the Engineer.

Fill cracks with PG 64-22 asphalt cement or other materials approved by the Engineer.

446.3.04 Fabrication

General Provisions 101 through 150.

446.3.05 Construction

When ambient temperatures are a minimum of 70 °F (21 ºC) and rising, reinforcement fabric with a self-adhesive backing may be installed at the Contractor's option. Do not apply reinforcement fabric with the self-adhesive backing when ambient temperatures are below 70 °F (21 ºC). If temperatures are between 45°F (7 ºC) and 70°F (21ºC), reinforcement fabric without a self-adhesive backing may be installed. Do not install reinforcement fabric when ambient temperatures are less than 45 °F (7 ºC).

A. Applying Bituminous Binder

When self-adhesive reinforcing fabric is applied on new or existing surfaces a bituminous application will not be necessary. When self-adhesive reinforcing fabric is applied to a milled surface, thoroughly clean the pavement of all dust and debris. Apply a prime coat of SS-1h meeting requirements of Section 822, "Emulsified Asphalt" at a rate of 0.10 gal/yd² (0.45 L/m²).

Use PG 64-22 asphalt cement to bond non-self-adhesive fabric to the pavement and apply at a rate of 0.10 gal/yd² (0.45 L/m²) over non-milled surfaces and 0.25 gal/yd² (1.13 L/m²) over milled surfaces. Heat the PG 64-22 asphalt cement and apply within a temperature range of 350 °F to 375 °F (175 ºC to 190 ºC).

Where using fabric strips, use a template or other method satisfactory to the Engineer to apply bituminous binder uniformly.

Do not allow the width of the binder applied to exceed the width of the fabric by more than 1 in (25 mm) on each side.

B. Placing the Fabric

For self-adhesive reinforcement fabric, remove the release liner of the fabric and place the adhesive side to the pavement.

Place non-self-adhesive reinforcement fabric a minimum of 24 hours in advance of the paving operations, if possible, to ensure proper adhesion of the fabric to the pavement. Place fabric on the pavement immediately after the bituminous binder has been applied to the pavement. Place the non-woven polyester side of the fabric on the pavement.

Install the fabric so that it is smooth, free of wrinkles with no uplifted edges. Provide a minimum of 5 in (125 mm) overlap on all sides of the repair area. Center the material over the repair area within a 2 in (50 mm) tolerance. When placed full width, use a mechanical device approved by the engineer to place the fabric on the pavement.

Immediately after the fabric is placed on the pavement, ensure that the fabric is in total contact with the underlying pavement. Roll the material with a static drum or pneumatic roller to ensure adequate adhesion to the pavement surface.

Any fabric with loose edges, corners or other improperly bonded areas shall be replaced at the expense of the Contractor prior to placement of the overlay or opening the fabric section to traffic.

C. Overlapping Fabric.

If more than one strip of fabric is required to cover the repair area, the seams that are created shall be butt or lapped seams. When waterproofing is required, use lap seams with a minimum 2 in (50 mm) overlap. Make all lapped seams in the direction of the paving operation to prevent pickup by the paving train. The width of the fabric strips shall be shown on the plans.

Make joint overlaps to prevent pickup by the paving train that places the asphaltic concrete.

D. Protecting Fabric

When full width fabric is used, schedule work so that the fabric will be covered with asphaltic concrete prior to reopening the section to traffic. Do not allow traffic, other than necessary construction equipment or emergency vehicles, on unprotected fabric. If approved by the Engineer, traffic will be allowed to use a section with applied fabric strips for a maximum of 7 days. Coordinate all activities to conform to this restriction. Replace any damaged fabric prior to paving at the Contractor's expense. When short-term pavement markings are required, the markings shall meet the requirements of Section 150.

When in-place fabric is exposed to moisture prior to application of the overlay, make sure the fabric is completely dry before the overlay is placed.

If the fabric sticks to tires of trucks or paving equipment during the construction overlays, hot mix asphalt may be broadcast over the fabric for protection.

E. Placing Overlay

Use an asphaltic concrete overlay that meets the requirements of Section 400.

Prior to placement of the overlay, apply a bituminous tack coat over the fabric at a rate determined by the Engineer as described in Subsection 400.3.03.A.3.

The minimum overlay thickness shall be 2 in (50 mm). When using a vibratory roller for compaction, avoid the use of excessive amplitude. The use of excessive amplitude during the compaction process may result in an undesirable riding surface.

446.3.06 Quality Acceptance

General Provisions 101 through 150.

446.3.07 Contractor Warranty and Maintenance

General Provisions 101 through 150.

446.4 Measurement

The reinforcement fabric and asphalt cement binder, complete, in place, and accepted is measured by the square yard (meter) for full-width fabric, or by the linear foot (meter) for fabric strips. No allowance will be made for laps.

446.4.01 Limits

General Provisions 101 through 150.

446.5 Payment

Payment will be made at the Contract Unit Price per square yard (meter) or per linear foot (meter) of reinforcement fabric as shown in Subsection 446.4, "Measurement."

Payment is full compensation for the work specified in this section, including cleaning the surface and furnishing and placing the asphalt cement binder and pavement reinforcement fabric.

Payment will be made under:

Item No. 446	Pavement reinforcement fabric strips, type___ including bituminous binder	Per linear foot (meter)
Item No. 446	Pavement reinforcement fabric full width, type___ including bituminous binder	Per square yard (meter)
Item No. 446	High Strength Pavement Reinforcement Fabric _____ inch (meter) Width	Per linear foot (meter)

446.5.01 Adjustments

General Provisions 101 through 150.

Section 447—Modular Expansion Joints

447.1 General Description

Specifications for this work will be included elsewhere in the Contract.

Section 448—Portland Cement Concrete End Dams and Patches

448.1 General Description

Specifications for this work will be included elsewhere in the Contract.

Section 449—Bridge Deck Joint Seals

449.1 General Description

This work consists of furnishing and installing bridge deck joint sealing systems at the locations shown on the Plans.

These bridge deck joint sealing systems consist of a joint seal and may include concrete headers. Use a joint seal material that conforms to one of the following:

- A preformed elastomeric neoprene profile seal, or
- A low-density, closed cell, cross-linked, ethylene vinyl acetate, polyethylene copolymer, nitrogen-blown seal.

Use either epoxy concrete or elastomeric concrete for header material. Mix and use elastomeric and epoxy concrete material according to the manufacturer's guidelines.

449.1.01 Definitions

General Provisions 101 through 150.

449.1.02 Related References

A. Standard Specifications

Section 106—Control of Materials

Section 501—Steel Structures

B. Referenced Documents

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